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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,950	10/21/2003	Ryo Shimada	P-6118-US	3324
27130	7590	03/09/2006	EXAMINER	
EITAN, PEARL, LATZER & COHEN ZEDEK LLP 10 ROCKEFELLER PLAZA, SUITE 1001 NEW YORK, NY 10020			NGUYEN, DAO H	
			ART UNIT	PAPER NUMBER
			2818	

DATE MAILED: 03/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary	Application No.	Applicant(s)	
	10/688,950	SHIMADA, RYO	
	Examiner	Art Unit	
	Dao H. Nguyen	2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>1003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is in response to the communications dated 10/21/2003.
Claims 1-19 are active in this application.

Acknowledges

2. Receipt is acknowledged of the following items from the Applicant.
Information Disclosure Statement (IDS) filed on 10/21/2003. The references cited on the PTOL 1449 form have been considered.

Applicant is requested to cite any relevant prior art if being aware on form PTO-1449 in accordance with the guidelines set for in M.P.E.P. 609.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim(s) 1, 8, and 15 is/are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1, 8, and 15, they define either an apparatus or a method; however, they are not clearly defined and distinctly pointed out that what is/are the

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apparatus or/and method for. The purpose(s) of the apparatus and/or the method is/are vague; or the subject matter which applicant regards as the invention(s) is/are not clear.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claim(s) 1-19 is/are rejected under 35 U. S. C. § 102 (b) as being anticipated by U.S. Patent No. 6,614,109 to Cordes et al.

Regarding claim 1, Cordes discloses an apparatus for thermal management of an integrated circuit, as shown in figs. 2a-c, comprising:

a thermoelectric converter 310 configuration having a first section 301 (cold end, comprising thermal sink 314 connected to contacts 322/324, fig. 2a) embedded in a die 302/303 and a second section 338 (hot end, fig. 2b) embedded in a substrate 339 connected to said die 302/303.

Regarding claim 2, Cordes discloses the apparatus wherein said first section 301 is embedded in an active side of said die. See figs. 2.

Regarding claim 3, Cordes discloses the apparatus wherein said first section 301 comprises a plurality of cold conductive elements to absorb heat from said active side (col. 4, lines 40-57), and wherein said second section 338 comprises a plurality of hot conductive elements to release said absorbed heat (col. 6, lines 1-27). See also figs. 2.

Regarding claim 4, Cordes discloses the apparatus wherein said configuration comprises a plurality of contacts 320/322/324/346/348/350/352 to electrically connect said first section 301 to said second section 338. See figs. 2.

Regarding claim 5, Cordes discloses the apparatus wherein one or more of said cold conductive elements is connected to one or more of said contacts. See figs. 2.

Regarding claim 6, Cordes discloses the apparatus wherein said second section 338 comprises a plurality of p-type elements 358/360 and n-type elements 328/330 connected to said hot conductive elements and to said contacts to form a substantially continuous electric connection between a positive terminal (b+) and a negative terminal (b-) of said thermo electric converter 310. See fig. 2c.

Regarding claim 7, Cordes discloses the apparatus comprising a heat sink 368 to convey heat out of said second section. See figs. 2.

Regarding claim 8, Cordes discloses an apparatus for thermal management of an integrated circuit, as shown in figs. 2a-c, comprising a semiconductor device package 310, the package comprising:

- a die 302/303; and

- a thermoelectric converter configuration having a first section 301 embedded in said die and a second section 338 embedded in a substrate 339 connected to said die.

Regarding claim 9, Cordes discloses the apparatus wherein said first section 301 is embedded in an active side of said die. See figs. 2.

Regarding claim 10, Cordes discloses the apparatus wherein said first section 301 comprises a plurality of cold conductive elements to absorb heat from said active side (col. 4, lines 40-57), and wherein said second section 338 comprises a plurality of hot conductive elements to release said absorbed heat (col. 6, lines 1-27). See also figs. 2.

Regarding claim 11, Cordes discloses the apparatus wherein said configuration comprises a plurality of contacts 320/322/324/346/348/350/352 to electrically connect said first section to said second section. See figs. 2.

Regarding claim 12, Cordes discloses the apparatus wherein one or more of said cold conductive elements is connected to one or more of said contacts. See figs. 2.

Regarding claim 13, Cordes discloses the apparatus wherein said second section 338 comprises a plurality of p-type elements 358/360 and n-type elements 328/330 connected to said hot conductive elements and to said contacts to form a substantially continuous electric connection between a positive terminal (b+) and a negative terminal (b-) of said thermo electric converter. See fig. 2c.

Regarding claim 14, Cordes discloses the apparatus comprising a heat sink 368 to convey heat out of said second section. See fig. 2c.

Regarding claim 15, Cordes discloses a method for thermal management of an integrated circuit, as shown in figs. 2a-c, comprising:

absorbing heat (col. 4, lines 40-57) from an active side of a die 302/303 by a plurality of cold conductive elements 301 embedded in said die; and

releasing said absorbed heat (col. 6, lines 1-27) by a plurality of hot conductive elements 338 embedded in a substrate 339 connected to said die.

Regarding claim 16, Cordes discloses the method comprising conveying said released heat out of said substrate. Col. 6, lines 1-27.

Regarding claim 17, Cordes discloses the method wherein conveying said released heat comprises using a heat sink 368 associated with said substrate 339. See fig. 2c.

Regarding claim 18, Cordes discloses the method comprising electrically connecting said hot conductive elements 301 to said cold conductive elements 338. See figs. 2.

Regarding claim 19, Cordes discloses the method wherein electrically connecting said elements comprises using a plurality of contacts 320/322/324/346/348/350/352 and a plurality of n-type elements 328/330 and p-type elements 358/360. See fig. 2c.

Conclusion

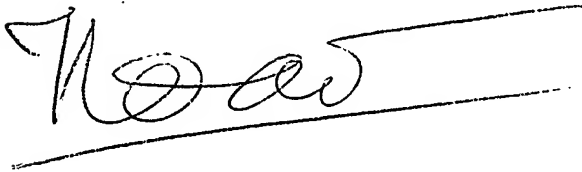
7. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dao H. Nguyen whose telephone number is (571)272-1791. The examiner can normally be reached on Monday-Friday, 9:00 AM – 6:00 PM.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)272-1787. The fax numbers for all communication(s) is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571)272-1625.

A handwritten signature in dark ink, appearing to read 'Dao H. Nguyen', written over a horizontal line.

Dao H. Nguyen
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March 5, 2006

A handwritten signature in dark ink, appearing to read 'David Nelms', written over a horizontal line.

David Nelms
Supervisory Patent Examiner
Technology Center 2800